KATHERINE DEARSTYNE

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EDUCATION

UNIVERSITY OF NOTRE DAME
Notre Dame, IN

Ph.D. in Computer Science

2021–Present

Arthur J. Schmitt Leadership Fellowship

DREXEL UNIVERSITY
Philadelphia, PA

B.S. in Computer Science

Minors: Mathematics, Psychology

2017–2021

Magna Cum Laude

PROGRAMS & FELLOWSHIPS

SPAR
Supervised Program for Alignment Research Research Fellow

Sep. 2025–Present

Selected as a SPAR Research Fellow to work under the supervision of Georg Lange, conducting research on mechanistic interpretability and the relationship between memorization and generalization in LLMs.

ARENA 7.0
Alignment Research Engineer Accelerator Accepted Participant (upcoming)

Jan. 2026–Feb. 2026

Admitted to a selective alignment research training program with a focus on mechanistic interpretability and empirical safety research.

WORK EXPERIENCE

Research Assistant
Aug. 2021–Present

University of Notre Dame · *Notre Dame, IN*

- Advised by Dr. Jane Cleland Huang, conducting research to create safer software systems through improved software engineering practices.
- Applied NLP techniques to improve trace link prediction and support automated software documentation.
- Developed a framework for designing more trustworthy reinforcement learning systems and generating more robust system requirements.

Research Intern
May 2025–Aug. 2025

Microsoft Research · *Redmond, WA*

- Worked with the Software Analysis and Intelligence in Engineering Systems (SAINTES) group in MSR to automate differential testing for a product group.
- Developed an AI agent for differential testing with traceability to key project artifacts, enabling engineers to validate outputs and ensure trustworthy results.
- Ongoing research focuses on extending these methods beyond differential testing to broader software engineering tasks and product groups.

Co-founder | Lead Researcher
Apr. 2022–Sep. 2024

SAFA.ai · *Notre Dame, IN*

- Co-founded SAFA.ai, a platform leveraging AI to improve traceability and requirements management in safety-critical systems.
- Secured an STTR Phase I grant with NASA and completed nine industry pilot projects.
- Accepted into the 2023 Techstars Los Angeles Accelerator.

Software & Systems Engineer
Apr. 2019–Mar. 2021

Lockheed Martin · *Mount Laurel, NJ*

- Worked on the Aegis System at the Rotary and Mission Systems Branch.
- Contributed to the development of a Java-based backend controller that reported real-time status of ship elements to user-facing interfaces.
- Automated system-level tests with a Python framework and led refactoring to improve modularity and maintainability.

PUBLICATIONS

1. **Revealing the Dark Matter: Connecting Tacit and System Knowledge in Human-AI Collaborations**
   Katherine R. Dearstyne, Carmen Badea, Christian Bird, Robert DeLine
   2026 ACM/IEEE International Conference on Software Engineering (ICSE), NIER Track, Rio de Janeiro, Brazil
   https://cabird.com/pdfs/dearstyne2026revealing.pdf

2. **Real-World Traceability Patterns for Generative AI Systems: With Insights from the Safa Dataset**
   Katherine R. Dearstyne, Alberto D. Rodriguez, Jane Cleland-Huang
   2026 RAISE Workshop on Requirements Engineering for AI-powered SoftwarE at ICSE, Rio de Janeiro, Brazil

3. **QuestRL: A Q&A Framework for Designing Trustworthy Reinforcement Learning Systems**
   Katherine R. Dearstyne, Pedro T. Alarcon Granadeno, Tyler Chambers, Jane Cleland-Huang
   2025 IEEE 33rd International Requirements Engineering Conference, Valencia, Spain
   https://ieeexplore.ieee.org/abstract/document/11190358

4. **Assessing Compliance of Software System Designs to Laws, Regulations, and their Underlying Values**
   Aleksandra Marczak-Czajka, **Katherine R. Dearstyne**, Jane Cleland-Huang
   2025 IEEE/ACM International Workshop on Designing Software (Designing) at ICSE, Ottawa, ON, Canada
   https://ieeexplore.ieee.org/document/11029552

5. **Supporting Software Maintenance with Dynamically Generated Document Hierarchies**
   Katherine R. Dearstyne, Alberto D. Rodriguez, Jane Cleland-Huang
   2024 IEEE International Conference on Software Maintenance and Evolution, Flagstaff, AZ
   https://ieeexplore.ieee.org/abstract/document/10795041

6. **ROOT: Requirements Organization and Optimization Tool**
   Katherine R. Dearstyne, Alberto D. Rodriguez, Jane Cleland-Huang
   2024 IEEE International Conference on Software Maintenance and Evolution, Flagstaff, AZ
   https://ieeexplore.ieee.org/abstract/document/10795032

7. **Prompts Matter: Insights and Strategies for Prompt Engineering in Automated Software Traceability**
   Alberto D. Rodriguez, **Katherine R. Dearstyne**, Jane Cleland-Huang
   2023 IEEE International Requirements Engineering Conference Workshops, Hanover, Germany
   https://ieeexplore.ieee.org/abstract/document/10260721

8. **SAFA: A Tool for Supporting Safety Analysis in Evolving Software Systems**
   Alberto D. Rodriguez, Timothy Newman, **Katherine R. Dearstyne**, Jane Cleland-Huang
   2022 IEEE/ACM International Conference on Automated Software Engineering, Rochester, MI
   https://dl.acm.org/doi/10.1145/3551349.3559535

9. **MEWS: Real-time Social Media Manipulation Detection and Analysis**
   Trenton W. Ford, Michael Yankoski, William Theisen, Tom Henry, Farah Khashman, **Katherine R. Dearstyne**, Tim Weninger, Pamela Bilo Thomas
   2021 Conference on Neural Information Processing Systems (NeurIPS), Competition and Demonstration Track, Virtual
   https://proceedings.mlr.press/v176/ford22a/ford22a.pdf